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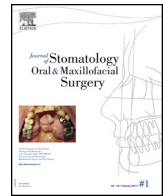
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Editorial

Severe odontogenic infections drastically dropped during the COVID19-confinement: because hospitals became sanctuaries or because of the massive interruption in the consumption of NSAIDs?

Odontogenic infections, which are considered to be easy to treat, are attributable to decayed or non-vital teeth, postoperative infections, periodontal disease and inflammation of the pericoronal tissues. They are usually managed by general dental practitioners or by referral to odontology services. Severe cases involving trismus, extensive cellulitis, dysphagia, dysphonia, dyspnea and refractory pain are dealt with by departments of oral and maxillofacial surgery. Treatment guidelines for severe odontogenic infections include surgical incision and drainage of the purulent collection(s) in combination with extraction of the tooth concerned or root canal treatment, oral cavity rehabilitation, and probabilistic parenteral antibiotic therapy. The management of dental cellulitis can be problematic with potentially systemic complications, prolonged hospitalization, several surgical procedures and intensive care follow-up to achieve complete healing. Treatment in these cases cannot be postponed or done in a dental office. Inpatient treatment of the medical complications of odontogenic infections in the United States costs almost \$200 million annually [1].

During the confinement period due to the Covid-19 pandemic, which in our region in France extended from March 17 to May 11, first line treatment was practically non-existent. As recommended, general dental practitioners stopped their activity, leaving centralized emergency management in the hands of the Council of the Order of Dental Surgeons, who set up a rotation of on-call practitioners. Second line treatment, composed of the emergency department of the odontology service, and third line treatment, composed of the department of oral and maxillofacial surgery, were expected to be drastically impacted. Surprisingly, this was not the case.

We decided to record retrospectively the number of patients admitted for odontogenic infection (acute apical abscess, periodontal abscess, pericoronitis, and cellulitis) to the dental emergency department of the University Hospital Center (UHC) of Clermont-Ferrand, France, and those hospitalized in the department of oral and maxillofacial surgery or transferred to the intensive care unit (ICU) of the UHC between March 17 and May 11 in the years 2015 to 2020. In 2020, 535 consultations for odontogenic infection requiring physical examination were recorded during the confinement period while between 2015 and 2019, 2693 patients (yearly mean $539 \pm$ standard-

deviation at 61) had consulted for the same reason ($p = 0.902$, one sample t-test). In 2020, severe odontogenic infection was recorded in 0.56% (3/535) of patients, and between 2015 and 2019 in 2.3% (61/2693) ($p = 0.01$, Chi-squared test). In 2020, no patient was admitted to the ICU for severe odontogenic infection as against 9 in the preceding 5 years (Fig. 1). During the confinement period, we observed an equivalent number of consultations for odontogenic infection, but for less severe forms and no patient with a life-threatening condition.

The number of patients treated for infectious disease in the dental emergency department has remained stable over the 6-year retrospective period of our study. However, it was widely expected that the cancellation of routine appointments with general dental practitioners along with patients' fear of contracting COVID-19 [2] in hospital would lead to delayed care and an increase in the severity of odontogenic infection [3]. In reaction to this speculation, we would like to make two objections.

The first is that the UHC of Clermont-Ferrand acquired sanctuary status. Events did not bear this out. Our region was little impacted by the Covid-19 pandemic. The number of patients physically cared for in the dental emergency department was constant, and the oral and maxillofacial surgery department, like the ICU, had spare hospital beds.

The second relates to changes in the consumption of non-steroidal anti-inflammatory drugs (NSAIDs) in France during the lockdown. From the beginning of the pandemic, it was suggested, but not proven, that NSAIDs worsened the severity of Covid-19 infection. Mass information campaigns spearheaded by a representative of the national medical authority to stop consumption of NSAIDs had a considerable impact on the nation's population. Data extracted on drug coverage by the French National Health System showed that consumption of NSAIDs decreased by 80% and oral corticosteroid therapy by 70% during the confinement period. NSAIDs can inhibit neutrophil functions, either aggregation or degranulation both in vitro and in vivo, and prostaglandin synthesis. These effects could consequently promote the onset or the aggravation of infectious processes normally controlled by a physiological immune response. NSAIDs also alleviate pain and edema, two important clinical signs of infection, with a resulting delay in diagnosis. A recent review of case-control studies suggests that NSAIDs are associated with higher rates of complications after respiratory tract infections such as complicated pneumonia,

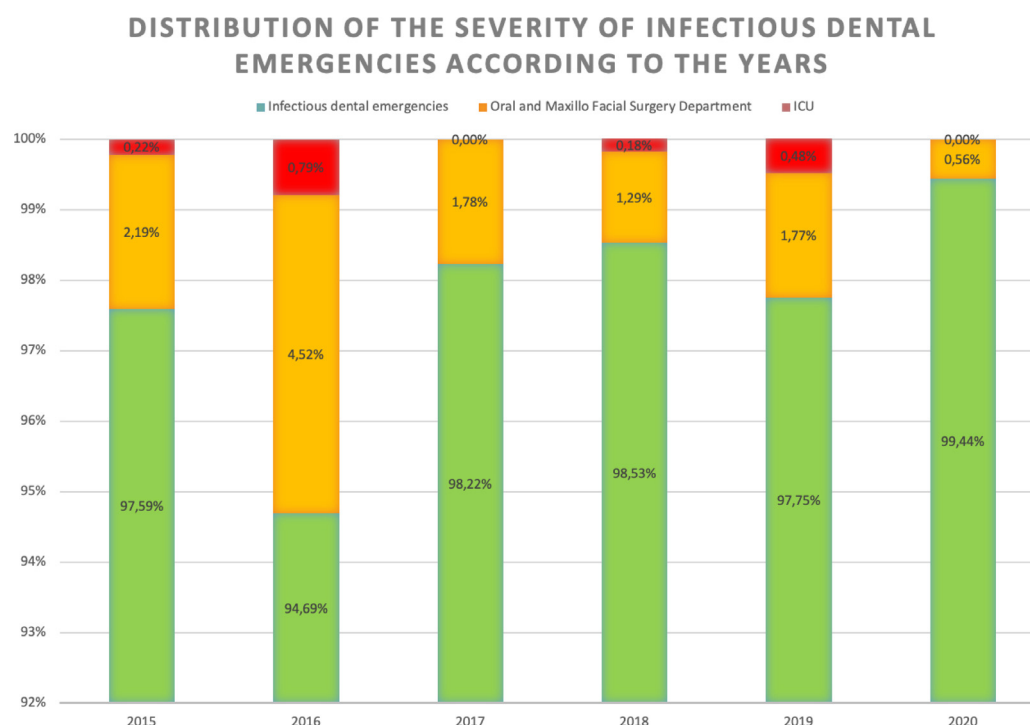


Fig. 1. Histogram showing the distribution in percentage of the severity of infectious dental emergencies according to the year.

pleural effusions, prolonged illness, peritonsillar abscess and dissemination [4]. A case-series reported that patients with severe odontogenic infection on NSAID therapy had a higher risk to develop mediastinitis or to be admitted to an ICU. However, the numerous clinical and epidemiologic studies concerning the potential risk of odontogenic infection developing into cervicofacial cellulitis through use of anti-inflammatory drugs have not yet come to a clear-cut conclusion [5], perhaps because it is impossible to evaluate the real consumption of NSAIDs (in terms of frequency and cumulative doses) in a given population. In our study, we observed that the mass decrease in NSAID consumption did not affect the number of odontogenic infections but seemed to have reduced their severity.

Dental pain can be divided into three distinct categories: inflammatory, infectious and neuropathic. Although it has not been proven scientifically, oral and maxillofacial surgeons and odontologists are aware that NSAID prescription is not appropriate in cases of infectious pain because of a possible risk of worsening the infection. And yet, through ignorance or negligence, NSAIDs are commonly proposed by pharmacologists and general practitioners or self-prescribed by the patient, irrespective of the cause of the pain. In the light of the experience of the last few months, we are designing a “short screener” questionnaire to determine whether the patient has a purely inflammatory dental disease, such as pulpitis, or an infectious dental disease, so as to guide prescription of NSAIDs or antibiotic therapy pending consultation with a specialist.

Conflict of Interest

The authors declare that they have no conflict of interest.

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